TRANSMITTAL OF APPEAL BRIEF (Large Entity)	Docket No. 3691

In Re Application Of: **STEINLECHNER, S.**

Application No.	Filing Date	Examiner	Customer No.	Group Art Unit	Confirmation No.
10/587,536	07/26/2006	HUYNH, P.	278	2857	8899

Invention: **METHOD AND ARRANGEMENT FOR CORRECTING...**

COMMISSIONER FOR PATENTS:

Transmitted herewith is the Appeal Brief in this application, with respect to the Notice of Appeal filed on: **11/06/2008**

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/MICHAEL J. STRIKER/
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Dated: 11/06/2008

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UNITED STATES PATENT AND TRADEMARK OFFICE

Examiner: Huynh, Phuong Art Unit: 2857 Docket No. 3691

In re:

Applicant: STEINLECHNER, S.

Serial No.: 10/587,536

Filed: July 26, 2006

BRIEF ON APPEAL

November 6, 2008

Commissioner for Patents
P O Box 1450
Alexandria, VA 22313-1450

This is a Brief on Appeal from the final objection and rejection of Claims 8, 10, 11 and 15 by the primary Examiner.

REAL PARTY IN INTEREST

The real party in interest in this application is Robert Bosch GmbH, having a business address of Postfach 30 02 20, D-70442 Stuttgart, Germany.

RELATED APPEALS AND INTERFERENCES

There are no prior and pending appeals, interferences or judicial proceedings known to appellant, the appellant's legal representative, or assignee which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

STATUS OF CLAIMS

Claims 1-7, 9 and 12-14 have been cancelled.

In the final Office Action of August 6, 2008, Claims 8, 10 and 15 were objected to.

Claims 8, 10 and 11 were rejected under 35 USC 102(b) as being anticipated by the U.S. patent to Gotz.

STATUS OF AMENDMENTS

The final Office Action was issued on August 6, 2008.

After the final Office Action, no Amendments were filed.

SUMMARY OF CLAIMED SUBJECT MATTER

The present invention relates to a method for correcting a sensor system of an angle-measuring sensor system which is an angle-measuring sensor system, or a distance measuring sensor system, or an angle and a distance measuring sensor system.

The method includes the evaluation of sinusoidal and cosinusoidal measurement signals (x_i y_i) obtained by scanning a moved measurement object in a magnetic field. Errors of the measurement signal, such as angle errors, phase errors, and angle and phase errors are corrected.

This is disclosed in lines 23-27 on page 4 and lines 1-9 on page 5 of the specification.

For correcting the sensor system, a compensation process and a subsequent correction process are provided. In the compensation process offset values (x_o, y_o) are provided from a specified number (N of j=1...N) of pairs of measured values (x_i, y_i) obtained by rotating a magnetic field, for the sinusoidal and cosinusoidal measurement signals (x_i y_i) and correction parameters (m_1, m_2) by applying a least square of errors method and solving a linear system of equations. This is disclosed in lines 10-22 on page 5 of the specification.

A corrected pair of corrected pair of measured values (x_i' y_i') is determined from each pair of the measured values (x_i y_i) in the correction process, and the corrected pair of the measured values (x_i' y_i') in the correction process is determined based on the relationship $x_i' = x_i - x_0$ and $y_i' = m_1 \cdot x_i' + m_2 (y_i - y_0)$. This is disclosed in page 5, in lines 12-18, on page 7, lines 5-10 of the specification, and shown in Figures 1 and 2.

GROUNDS OF OBJECTIONS AND REJECTIONS
TO BE REVIEWED ON APPEAL

First ground to be reviewed on appeal is whether Claims 8, 10 and 15 can be considered as objectionable.

Second ground to be reviewed on appeal is whether Claims 8, 10 and 11 are rejectable under 35 USC 102(b) as being anticipated by the U.S. patent to Gotz.

ARGUMENT

Argument related to the grounds for objection of Claims 8, 10 and 15

In accordance with the Examiner's objection to Claim 8 under 37 CFR 1.75(i), applicant submitted a Simultaneous Amendment in which the elements of Claim 8 are separated by a line indentation.

As for the specific limitations ($w_1 \ldots w_5$) in Claim 8, variables x, y, x_i', y_i' in Claim 8, variables x and y in Claim 10, and expressions sx_1-sx_4, sy_1-sy_4, these variables are generally known in the art, they do not need additional clarifications or identification of their ranges, and they do not need antecedent basis as well.

It is therefore believed that the Examiner's grounds for the objections to the claims should be considered as not tenable and should be withdrawn.

Argument related to rejection of Claims 8, 10 and 11

In accordance with the present invention, in the inventive method for correcting a sensor system, a compensation (or calibration) process is performed, or in other words error parameters are determined, with which then during the use the determined measuring values can be corrected. In the prior art, in particular in the patent to Gotz applied by the Examiner against the claims, a so-called gradient process is used, or in other words an interactive process, in which the measuring value is corrected in small steps.

In the method in accordance with the present invention the following steps are performed:

In a so-called compensation (calibration) process four parameters x_o, y_o, m_1 and m_2 are determined. This in practice can be performed during the manufacture on the sensor as explained in the specification on pages 2-4. These four parameters are specific for each sensor and are stored for example in the sensor on a chip. These stored parameters are used so that during the operation the determined measured value pairs (x_i, y_i) are corrected during the operation.

These stored parameters are used so that the measured value pairs (x_i, y_i) determined during the operation are corrected during the operation. In a correction

process with the use of the four parameters x_0, y_0, m_1 and m_2 the corrected measured value pairs (x_i', y_i') are determined.

In contrast to this method, in the patent to Gotz six parameters x_c, x_d, y_c, y_d, x_0 and y_0 are determined, as disclosed in particular in column 5, starting from line 32. In the patent to Gotz there was the same problem. However, in this reference six parameters and not four parameters as in the applicant's invention are determined, and as a result a different, not simply transferable process is proposed. The significant difference can be clearly understood in the patent to Gotz from column 5, starting from line 18. Here the gradient process called also adaptation process, is described. In repeating turning loops, or in other words, step-by-step, the correct value is mathematically approximated. This requires much more time than in the so-called "direct process" in accordance with the applicant's invention. It can be clearly understood from claim 1 of the patent to Gotz, in column 7, starting from line 55.

The new features of present invention which are now defined in claim 8 are not disclosed in the patent to Gotz.

The original claims were rejected over this reference as being anticipated. In connection with this, it is believed to be advisable to cite the decision in re Lindenman Maschinenfabrik GmbH v. American Hoist & Derrick Co., 221 USPQ 481, 485 (Fed. Cir. 1984) in which it was stated:

> "Anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, arranged as in the claim."

Definitely, the reference does not disclose each and every feature of the present invention which are now defined in claim 8.

Also, as explained herein above, the present invention provides for the highly advantageous results which can not be accomplished by the method disclosed in the reference.

It is well known that in order to support a valid rejection the art must also suggest that it would accomplish applicant's results. This was stated by the Patent Office Board of Appeals, in the case Ex parte Tanaka, Marushma and Takahashi (174 USPQ 38), as follows:

> Claims are not rejected on the ground that it would be obvious to one of ordinary skill in the art to rewire prior art devices in order to accomplish applicant's result, since there is no suggestion in prior art that such a result could be accomplished by so modifying prior art devices.

The present invention can not be considered as obvious from the reference, since the reference does not contain any hint or suggestion for the new features of the present invention. In order to arrive at the present invention from the reference, the reference has to be fundamentally modified, and in particular by introducing into it the new features of the present invention which are now defined in amended claim 8. However, it is known that in order to arrive at a claimed invention, by

modifying the references cited art must itself contain a suggestion for such a modification.

This principle has been consistently upheld by the U.S. Court of Customs and Patent Appeals which, for example, held in its decision in re Randol and Redford (165 USPQ 586) that

> Prior patents are references only for what they clearly disclose or suggest; it is not a proper use of a patent as a reference to modify its structure to one which prior art references do not suggest.

In view of the above presented remarks and amendments, it is believed that claim 8 should be considered as patentably distinguishing over the art and should be allowed.

As for the dependent claims, these claims depend on claim 8, they share its allowable features, and should be allowed as well.

Reconsideration of the present application, reversal of the Examiner's objections and rejections, and allowance of the present application is most respectfully requested.

Respectfully submitted,
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CLAIM APPENDIX

Claims 1-7 cancelled.

8. A method for correcting a sensor system selected from the group consisting of an angle-measuring sensor system, a distance-measuring sensor system, and an angle-and a distance-measuring sensor system comprising the steps of evaluating sinusoidal and cosinusoidal measurement signals (x_i y_i) obtained by scanning a moved measurement object in a magnetic field; correcting errors of the measurement signals (x_i y_i) selected from the group consisting of a angle errors, phase errors, and angle and phase errors providing for the correcting the sensor system a compensation process and a subsequent correction process; in the compensation process, providing offset values (x_o, y_0) from a specified number (N of j=1...N) of pairs of measured values (x_i, y_i) obtained by rotating a magnetic field, for the sinusoidal and cosinusoidal measurement signals (x_i y_i) and correction parameters (m_1, m_2) by applying a least square of errors method and solving a linear system of equations; determining a corrected pair of measured values (x_i' y_i') from each pair of the measured values (x_i y_i) in the correction process, whereby determining the corrected pair of the measured values (x_i' y_i') in the correction process based on the relationship

$x_i' = x_i - x_0$ and $y_i' = m_1 \cdot x_i' + m_2 (y_i - y_0)$, whereby

determining the pair of measured values (x_i y_i) in the compensation process located on ellipses and satisfying the following equation:

$f(x,y) = w_1 \cdot x^2 + 2 \cdot w_2 \cdot x \cdot y + w_3 \cdot y^2 + 2 \cdot w_4 \cdot x + 2 \cdot w_5 \cdot y \pm 1$,

whereby determining parameters of elipses ($w_1 \ldots w_5$) using the least square of errors (g) method, with

$$g = \sum_{i=1}^{N} f(x_i, y_i)^2 = \min; \text{ and}$$

determining an angle (α) to be measured from particular corrected pairs of the measured values (x_i' y_i') using an algorithm.

Claim 9 cancelled.

10. A method as defined in claim 8; and further comprising determining an angle (α) to be measured in the correction process based on the relationship $\alpha = arc(x' + i \cdot y')$.

11. A method as defined in claim 8; and further comprising determining a derivative of the square of errors (g) with respect to the parameters of the ellipse ($w_1 \ldots w_5$), and setting a particular derivative equal to zero, to determine a minimum, and using the particular derivatives to create a linear system of equations, so that, using a suitable elimination process, the system of equations is solved for required parameters of the ellipse ($w_1 \ldots w_5$) and the offset values (x_0, y_0) and the correction parameters (m_1, m_2) are determined.

Claims 12-14 cancelled.

15. A method as defined in claim 8, wherein the linear equation system corresponds to the equation

$$\begin{bmatrix} sx4 & 2\cdot sx3y & sx2y2 & 2\cdot sx3 & 2\cdot sx2y \\ sx3y & 2\cdot sx2y2 & sxy3 & 2\cdot sx2y & 2\cdot sxy2 \\ sx2y2 & 2\cdot sxy3 & sy4 & 2\cdot sxy2 & 2\cdot sy3 \\ sx3 & 2\cdot sx2y & sxy2 & 2\cdot sx2 & 2\cdot sxy \\ sx2y & 2\cdot sxy3 & sy3 & 2\cdot sxy & 2\cdot sy2 \end{bmatrix} \cdot \begin{bmatrix} w_1 \\ w_2 \\ w_3 \\ w_4 \\ w_5 \end{bmatrix} = \begin{bmatrix} -sx2 \\ -sxy \\ -sy2 \\ -sx \\ -sy \end{bmatrix}.$$

and wherein

$$sx = \sum_{i=1}^{N} x_i \quad sy = \sum_{i=1}^{N} y_i \quad sxy = \sum_{i=1}^{N} x_i \cdot y_i$$

$$sx2 = \sum_{i=1}^{N} x_i^2 \quad sy2 = \sum_{i=1}^{N} y_i^2 \quad sx2y = \sum_{i=1}^{N} x_i^2 \cdot y_i$$

$$sx3 = \sum_{i=1}^{N} x_i^3 \quad sy3 = \sum_{i=1}^{N} y_i^3 \quad sxy2 = \sum_{i=1}^{N} x_i \cdot y_i^2$$

$$sx4 = \sum_{i=1}^{N} x_i^4 \quad sy4 = \sum_{i=1}^{N} y_i^4 \quad sxy3 = \sum_{i=1}^{N} x_i \cdot y_i^3$$

$$sx3y = \sum_{i=1}^{N} x_i^3 \cdot y_i$$

is, and with the determined ellipse parameters

$w_1 \ldots w_5$

$$x_0 = \frac{w_2 \cdot w_4 - w_1 \cdot w_5}{w_1 \cdot w_3 - w_2^2}$$

and

$$y_0 = \frac{w_2 \cdot w_4 - w_1 \cdot w_5}{w_1 \cdot w_3 - w_2^2}$$

via the intermediate values

$$v = \sqrt{\frac{w_1 + w_3 - r}{w_1 + w_3 + r}}$$

with

$$r = \sqrt{(w_1 - w_3)^2 + 4 \cdot w_2^2}$$

and

$$m_1 = \frac{w_2}{r} \cdot \left(\frac{1}{v} - v \right)$$

$$m_2 = \frac{1}{2} \cdot \left(\left(\frac{1}{v} + v \right) - \left(\frac{1}{v} - v \right) \frac{w_1 - w_3}{r} \right)$$

are calculated.

EVIDENCE APPENDIX

None.

RELATED PROCEEDINGS APPENDIX

None.